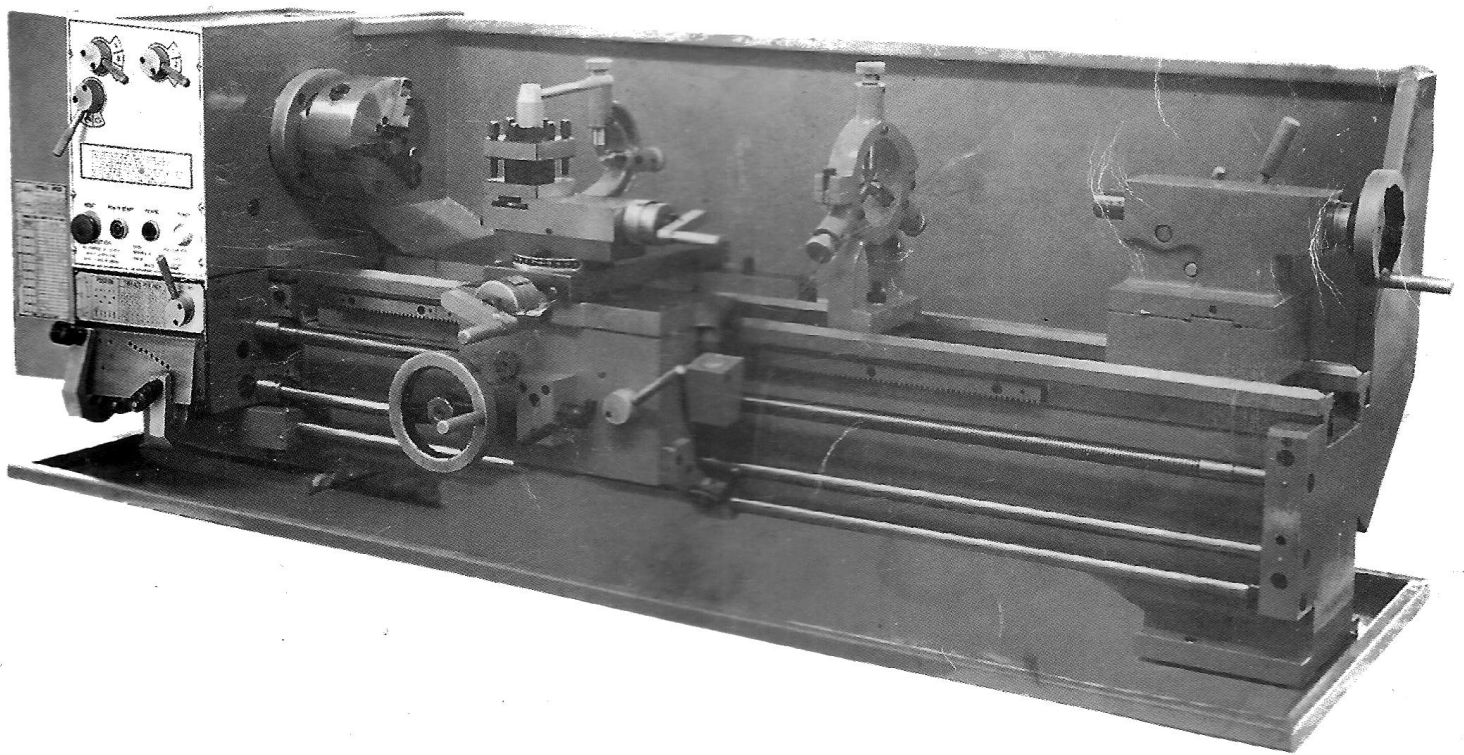


OPERATOR'S MANUAL



THE PEOPLE'S REPUBLIC OF CHINA



WARNING

- **Read and understand the entire instruction manual before operating machine.**
- **This manual is intended to familiarize you with the technical aspects of this lathe. It is not, nor was it intended to be, a training manual.**
- **This machine is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper safe use of lathe, do not use this machine until proper training and knowledge has been obtained.**
- Always wear approved safety glasses/ face shields while using this machine.
- Make certain the machine is properly grounded.
- Before operating the machine, remove tie, rings, watches, other jewelry, and roll up sleeves above the elbows. Remove all loose clothing and confine long hair. Do **not** wear gloves.
- Keep the floor around the machine clean and free of scrap material, oil and grease.
- Keep machine guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately.
- **Do not** over reach. Maintain a balanced stance at all times so that you do not fall or lean against blades or other moving parts.
- Make **all** machine adjustments or maintenance with the machine unplugged from the power source.
- Use the **right** tool. Don't force a tool or attachment to do a job, which it was not designed for.
- Replace warning labels if they become obscured or removed.
- Make certain the motor switch is in the OFF position before connecting the machine to the power supply.
- Give your work undivided attention. Looking around, carrying on a conversation and "horse – play" are careless acts that can result in serious injury.
- Keep visitors a safe distance from the work area.
- Use recommended accessories, improper accessories may be hazardous.
- Make a habit of checking to see that keys and adjusting wrenches are removed before turning on the machine.
- Never attempt any operation or adjustment if the procedure is not understood.
- Keep fingers away from revolving parts and cutting tools while in operation.
- Keep belt guards in place and in working order.
- Never force the cutting action.
- Do not attempt to adjust or remove tools during operation.
- Always keep cutters sharp.
- Always use identical replacement parts when servicing.
- Failure to comply with **all of these** warnings may cause **serious injury**.

Specifications:

Capacities:

Swing Over Bed	12" (305mm)	13" (330mm)
Swing Over Cross Slide		8" (200mm)
Swing Through Gap	17" (430mm)	18" (450mm)
Length of Gap		8" (200mm)
Distance Between Centers	36" (900mm)	40" (1016mm)

Headstock:

Hole Through Spindle	1 - 1/2" (38mm)
Spindle Nose	D1 - 4
Taper in Spindle Nose	MT - 5
Spindle Taper Adapter	MT - 3
Spindle Bearing Type	Taper Roller Bearing
Number of Spindle Speeds	18
Range of Spindle Speeds	50 - 1500 RPM

Gearbox:

Number of Longitudinal and Cross Feeds	40
Range of Longitudinal Feeds (inch/rev. or mm/rev.)	0.0011" - 0.0311" (0.028 - 0.791mm)
Range of Cross Feeds (inch/rev. or mm/rev.)	0.0004" - 0.0105" (0.010 - 0.268mm)
Number of Inch Threads	40
Range of Inch Threads	4 - 112 T.P.I.
Number of Metric Threads	29
Range of Metric Threads	0.2 - 4.5mm
Leadscrew	7/8" x 8 T.P.I.
Feed Rod Diameter	3/4"

Compound and Carriage:

Toolpost Type	4 - Way
Maximum Tool Size	5/8" x 5/8"
Maximum Compound Slide Travel	3" (76mm)
Maximum Cross Slide Travel	5 - 1/8" (130mm)
Maximum Carriage Travel	32" (800mm) 36" (914mm)

Tailstock:

Tailstock Spindle Travel	4" (100mm)
Diameter of Tailstock Spindle	1 - 1/4" (32mm)
Taper in Tailstock Spindle	MT - 3

Miscellaneous:

Steady Rest Capacity	1/5" - 1 - 3/5" (Ø5 ~ Ø40mm)
Follow Rest Capacity	1/5" - 1 - 3/5" (Ø5 ~ Ø40mm)
Length of Bed	60" (1524mm) 63" (1600mm)
Width of Bed	7 - 1/8" (180mm)
Height of Bed	12" (304mm) 13" (330mm)
Overall Dimensions	70" L x 28 - 3/4" W x 23" H 74" L x 28 - 3/4" W x 24" H
With Stands	70" L x 28 - 3/4" W x 49" H 74" L x 28 - 3/4" W x 50" H
Main Motor	60HZ
	2HP
	230v
Net Weight (approx.)	1014 lbs. (460kg) 1190 lbs. (540kg)
Shipping Weight (approx.)	1235 lbs. (560kg) 1411 lbs. (640kg)

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WARNING

Read and understand the entire contents of this manual before attempting set - up or operation! Failure to comply may cause serious injury!

Contents of the Shipping Container

- 1 Lathe
- 1 Steady Rest (mounted on lathe) (For 13" Lathe or 12" Lathe)
- 1 Follow Rest (mounted on lathe) (For 13" Lathe or 12" Lathe)
- 1 6" Three Jaw Chuck (mounted on lathe)
- 1 8" Four Jaw Chuck
- 1 12" Face Plate (strapped to container)
- 1 Tool Box (strapped to container)
- 1 Chip Pan
- 1 Distributing Box (mounted on lathe)
- 1 Motor

Tool Box Contents

- 2 Center (MT - 3)
- 1 Center Sleeve
- 1 Flat Blade Screwdriver 4"
- 1 Cross Point Screwdriver 4"
- 1 Oil Gun
- 1 Square Head Wrench
- 1 Monkey Wrench (8")
- 6 Hexagonal (3, 4, 5, 6, 8, 10mm)
- 9 Change Gear (40, 40, 80T are in the lathe) (25, 26, 40, 40, 43, 46, 47, 60, 80T)
- 1 Chuck Key
- 1 Tool Post Wrench
- 1 Operator's Manual

Uncrating and Clean – Up

1. Finish removing the wooden crate from around the lathe.
2. Unbolt the lathe from the shipping crate bottom.
3. Choose a location for the lathe that is dry, has good lighting, and has enough room to be able to service the lathe on all four sides.
4. Sling lathe with adequate lifting equipment, slowly raise the lathe off the shipping crate bottom. See Fig 1. Make sure lathe is balanced before moving to sturdy bench or optional stand. (Note: Do not lift the lathe by the spindle.)
5. To avoid twisting the bed, the lathe's location must be absolutely flat and level. Bolt the lathe to the stand (if used). If using a bench, through bolt for best performance.
6. Clean all rust protected surfaces using a mild commercial solvent, kerosene or diesel fuel. Do not use paint thinner, gasoline or lacquer thinner. These will damage painted surfaces. Cover all cleaned surfaces with a light film of 20W – machine oil.
7. Remove the end gear cover. Clean all components of the end gear assembly and coat all gears with a heavy, non-slinging grease.
8. Using a machinist's precision level on the bedways, check to make sure lathe is level side to side and front to back. Loosen mounting bolts, shim, and tighten mounting bolts, if necessary. The lathe must be level to be accurate.

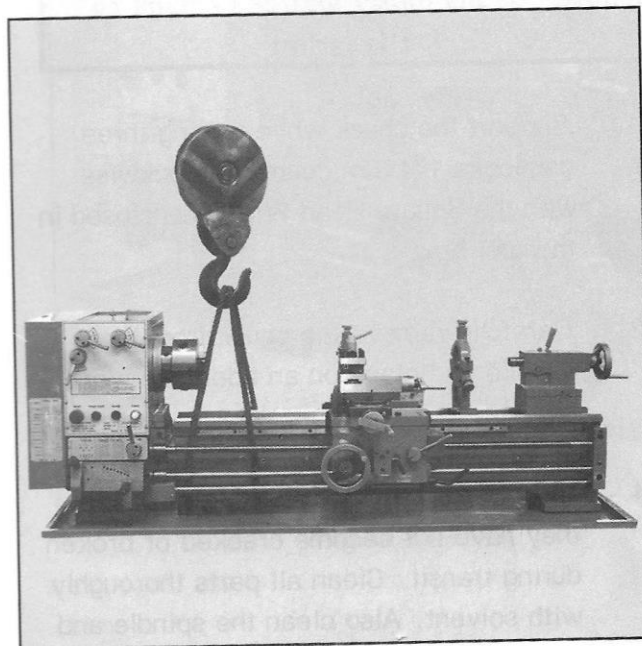


Fig. 1

Chuck Preparation(Three Jaw)

WARNING

Read and understand all directions for chuck preparation! Failure to comply may cause serious injury and/or damage to the lathe!

1. Support the chuck while turning three camlocks 1/4 turn counter – clockwise with the Square Head Wrench enclosed in the tool box.
2. Carefully remove the chuck from the spindle and place on an adequate work surface.
4. Inspect the camlock studs. Make sure they have not become cracked or broken during transit. Clean all parts thoroughly with solvent. Also clean the spindle and camlocks.
5. Cover all chuck jaws and scroll inside the chuck with # 2 lithium tube grease. Cover the spindle, cam locks, and chuck body with a light film of 20W oil.
6. Lift the chuck up to the spindle nose and press onto the spindle. Tighten in place by turning the cam locks 1/4 turn clockwise. The index mark(A, Fig.2) on the camlock should be between the two indicator arrows(B, Fig.2). If the index mark is not between the two arrows, remove the chuck and adjust the camlock studs by either turning out one full turn(if cams will not engage) or turning in one full turn (if cams turn beyond indicator marks).
7. Install chuck and tighten in place.

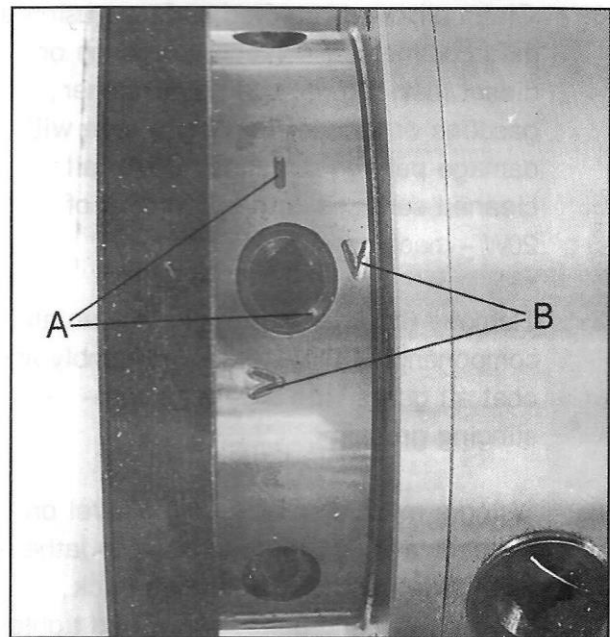


Fig.2

Lubrication



CAUTION

Lathe must be serviced at all lubrication points and all reservoirs filled to operating level before the lathe is placed into service! Failure to comply may cause serious damage to the lathe!

1. **Headstock** – Oil must be up to indicator mark in oil sight glass(A, Fig.3). Top off with Shell Turbo T – 68 or equivalent. Fill by pulling plug(B, Fig.3). To drain, remove drain plug with 8 mm hex wrench. Drain oil completely and refill after the first three months of operation. Then, Change oil in the headstock annually.
2. **Change gear** – Remove end gear cover and oil the change gears with the oil gun using 20W machine oil once daily.
3. **Gearbox** – Lubricate two oil ports(C, Fig.3)with Shell Turbo T – 68 or equivalent daily.
4. **Apron** – Remove oil cap(A, Fig.4) on top of apron to fill. To drain,remove drain plug on bottom of apron. Drain oil completely and refill with Shell Turbo.T68 or equivalent after the first three months of operation. Then, change oil annually. Lubricate one oil port(D, Fig.3)on the apron hand wheel once daily with 20W machine oil.
5. **Cross Slide** – Lubricate three oil ports (C, Fig.4) with 20W machine oil once daily.
6. **Compound Rest** – Lubricate three oil ports(D, Fig.4)with 20W machine oil once daily.
7. **Carriage** – Lubricate two oil ports(B, Fig.4)with 20W machine oil once daily.

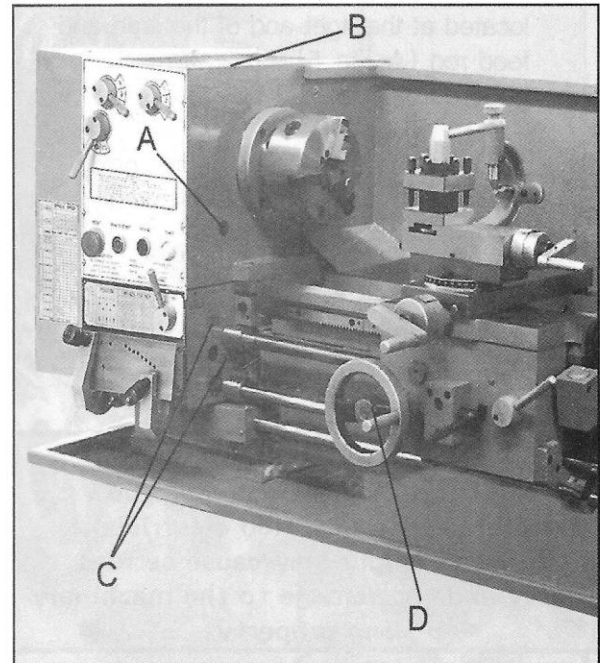


Fig.3

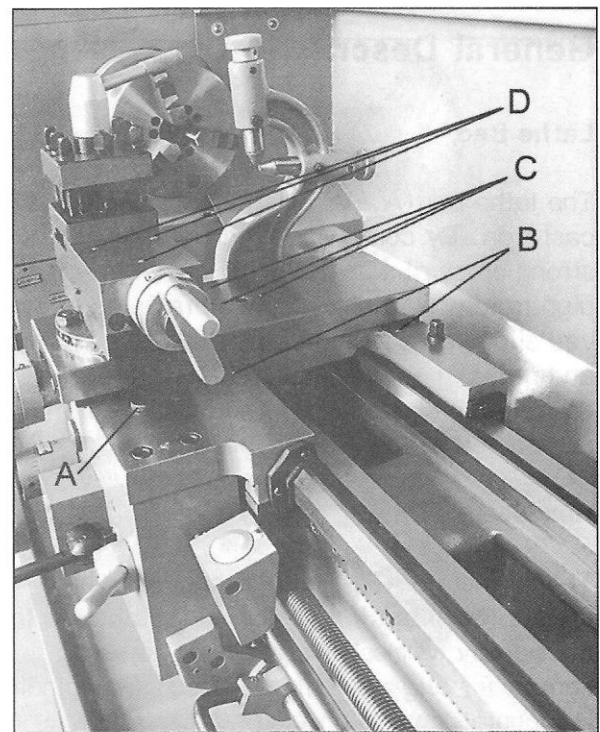


Fig.4

8. **Leadscrew Feed Rod** – Lubricate two ball oilers on leadscrew feed rod bracket located at the right end of the lead and feed rod (A, Fig. 5) with 20W machine oil once daily.
9. **Tailstock** – Lubricate one oil port (B, Fig. 5) with 20W machine oil once daily.

Electrical Connections



WARNING

All electrical connections must be completed by a qualified electrician! Failure to comply may cause serious injury and/ or damage to the machinery and property!

The lathe is rated at 2HP, 60HZ 230V. Confirm power available at the lathe's location is the same rating as the lathe. Make sure the lathe is properly grounded.

General Description

Lathe Bed

The lathe bed (A, Fig. 6) is made of high grade cast iron. By combining high cheeks with strong cross ribs, a bed with low vibration and high rigidity is realized. Two precision ground vee slideways, reinforced by heat hardening and grinding, are an accurate guide for the carriage and headstock. The main drive motor is mounted to the rear of the bed.

Headstock

The headstock (B, Fig. 6) is cast from high grade, low vibration cast iron. It is bolted to the bed by four screws with two adjusting screws for alignment. In the head, the spindle is mounted on two precision taper roller bearings. The hollow spindle has Morse Taper # 5 with a 1 – 1/2" bore.

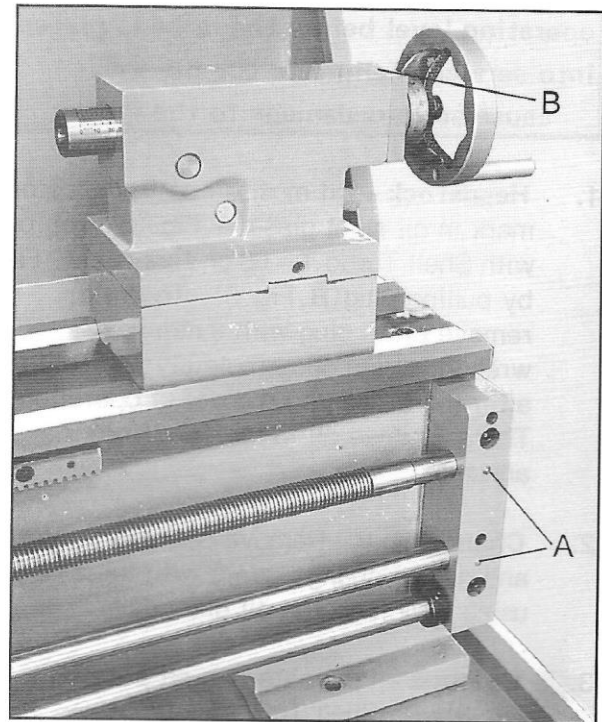


Fig. 5

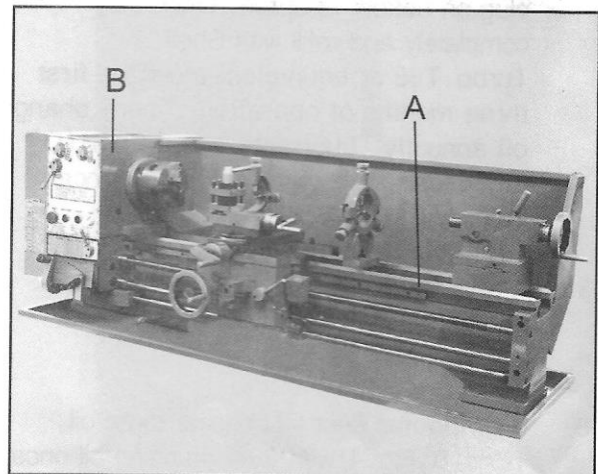


Fig. 6

Carriage

The carriage (A, Fig. 7) is made from high quality cast iron. The sliding parts are smooth ground. The cross – slide is mounted on the carriage and moves on a dove – tailed slide which can be adjusted for play by means of the gibs.

The top slide compound (B, Fig. 7), which is mounted on the cross slide (C, Fig. 7), can be rotated through 360°. The top slide and the cross slide travel in a dovetail slide and have adjustable gibs. A four – way tool post is fitted on the top slide.

Four Way Tool Post

The four – way tool post (D, Fig. 7) is mounted on the top slide and allows a maximum of four tools to be mounted simultaneously. Remember to use a minimum of two clamping screws when installing a cutting tool.

Apron

The apron (E, Fig. 7) is mounted to the carriage. In the apron a half nut is fitted. The half nut gibs can be adjusted from the outside. The half nut is engaged by use of a lever. Quick travel of the apron is accomplished by means of a bed – mounted rack and pinion, operated by a hand wheel on the front of the apron.

Tailstock

The tailstock (A, Fig. 8) slides on a v – way and can be locked at any location by a clamping lever. The tailstock has a heavy – duty spindle with a Morse Taper # 3.

Leadscrew and Feed Rod

The leadscrew (B, Fig. 8) and feed rod (C, Fig. 8) are mounted on the front of the machine bed. They are connected to the gearbox at the left for automatic feed and lead and are supported by bushings on both ends. Both are equipped with brass shear pins.

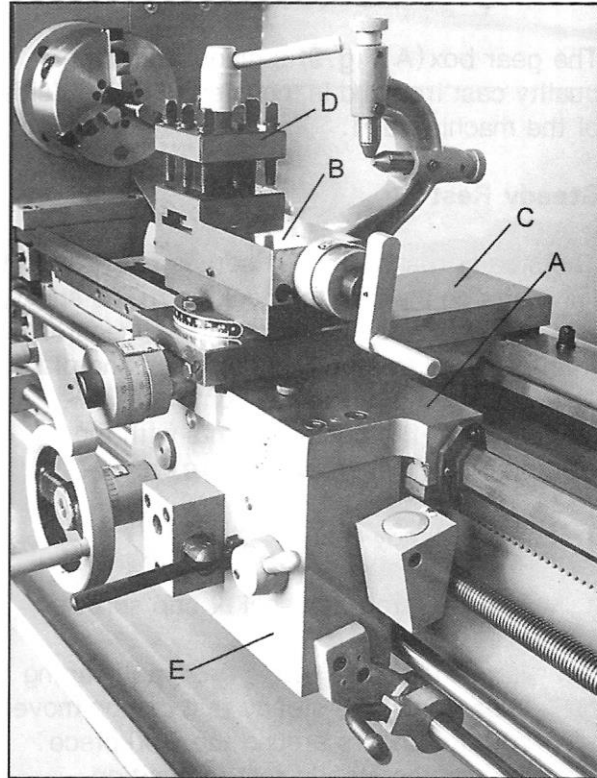


Fig. 7

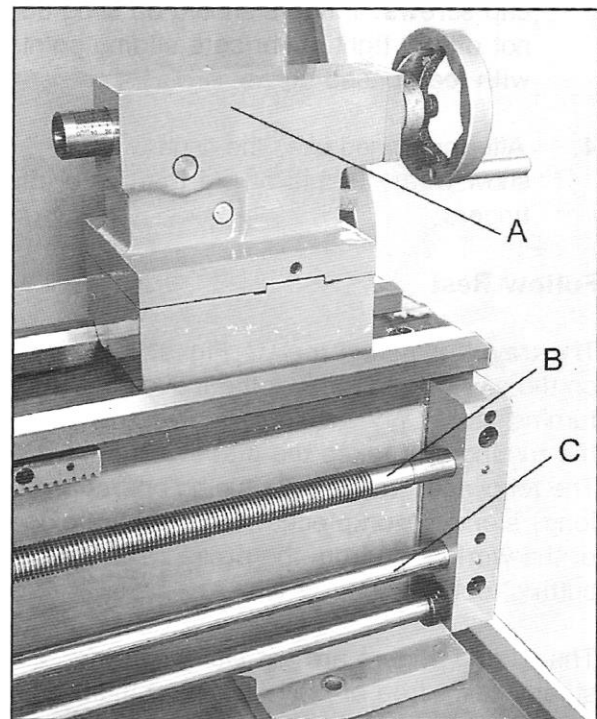


Fig. 8

Gear Box

The gear box (A, Fig. 9) is made from high quality cast iron and is mounted to the left side of the machine bed.

Steady Rest

The steady rest (B, Fig. 9) serves as a support for shafts on the free tailstock end. The steady rest is mounted on the bedway and secured from below with a bolt, nut and locking plate. The sliding fingers require continuous lubrication at the contact points with the workpiece to prevent premature wear.

To set the steady rest:

1. Loosen three hex socket cap screws.
2. Loosen knurled screw and open sliding fingers until the steady rest can be moved with its fingers around the workpiece. Secure the steady rest in position.
3. Set the fingers snugly to the workpiece and secure by tightening three hex socket cap screws. Fingers should be snug but not overly tight. Lubricate sliding points with lead based grease.
4. After prolonged use, the finger will show wear. Remill or file the tips of the fingers.

Follow Rest

The traveling follow rest (C, Fig. 9) is mounted on the saddle and follows the movement of the turning tool. Only two fingers are required as the turning tool takes the place of the third. The follow rest is used for tuning operations on long, slender workpieces. It prevents flexing of the workpiece from the pressure of the cutting tool.

The sliding fingers are set similar to the steady rest, free of play, but not binding. Always lubricate adequately with lead based grease during operation.

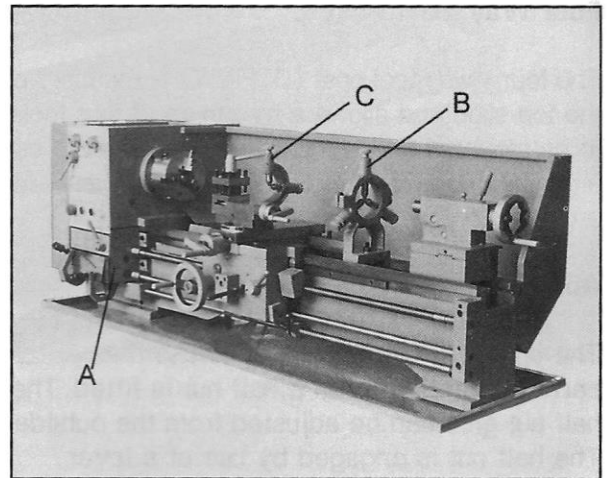


Fig. 9

Controls

1. **Headstock Gear Change Levers (A, Fig. 10)** – located on front of headstock at the top. Move the levers down or up to desired spindle speed.
2. **Feed Direction Selector (B, Fig. 10)** – located on front of headstock. Moving the lever to left causes carriage travel toward the tailstock. Moving the lever to right causes carriage travel toward the headstock. Do not move the lever while machine is running.
3. **Feed Rod/Leadscrew Selector (C, Fig. 10)** – located on front of lathe above feed rate selectors. Move lever to left to activate feed rod. Move lever to the right to activate leadscrew.
4. **Feed Rate Selectors (D, Fig. 10)** – two levers located at the bottom of the headstock. Use to set desired feed or lead rates.
5. **Power Indicator Light (E, Fig. 10)** – lit whenever lathe has power.
6. **Inching Switch (F, Fig. 10)** – depress to advance spindle momentarily.
7. **Power Start Switch (G, Fig. 10)** – turns main power to the lathe on and off.
8. **Reset Switch (H, Fig. 10)** – depress to stop all machine functions. (Caution: lathe will still have power.) Twist to reset.
9. **Compound Rest Lock (A, Fig. 11)** – set screw located on side of compound rest. Turn clockwise to lock and counter – clockwise to unlock.
10. **Carriage Lock (B, Fig. 11)** – hex socket cap screw located on top rear of carriage body. Turn clockwise and tighten to lock. Turn counter – clockwise and loosen to unlock. **Caution:** carriage lock screw must be unlocked before engaging automatic feeds or damage to lathe may occur.

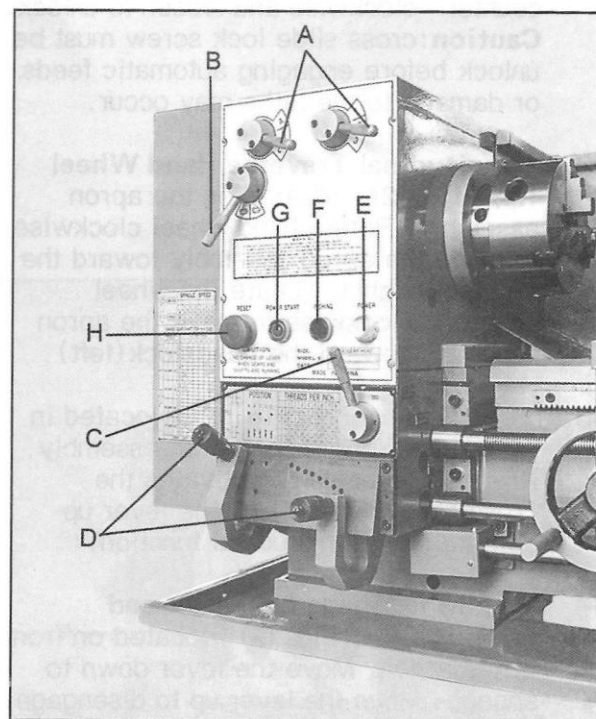


Fig. 10

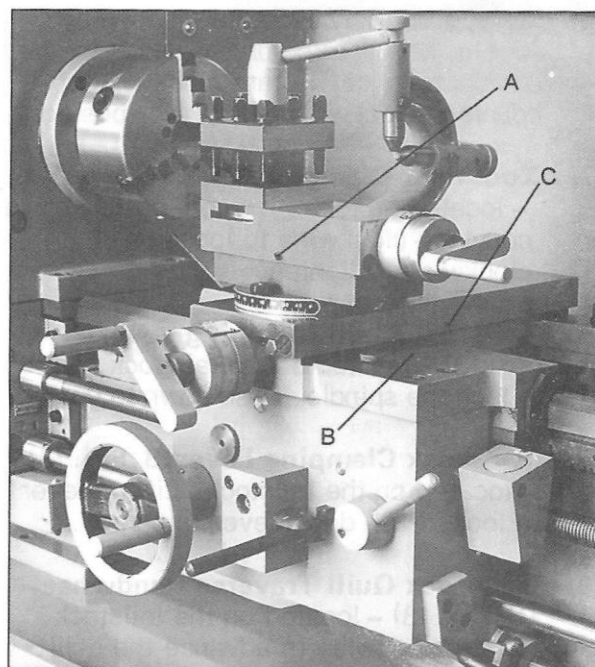


Fig. 11

11. **Cross Slide Lock (C, Fig. 11)** – set screw located on side of cross slide body. Turn clockwise and tighten to lock. Turn counter – clockwise and loosen to unlock. **Caution:** cross slide lock screw must be unlock before engaging automatic feeds or damage to the lathe may occur.
12. **Longitudinal Traverse Hand Wheel (A, Fig. 12)** – located on the apron assembly. Rotate hand wheel clockwise to move the apron assembly toward the tailstock (right). Rotate the wheel counter – clockwise to move the apron assembly toward the headstock (left).
13. **Feed Selector (B, Fig. 12)** – located in the center front of the apron assembly. Push the lever down activates the crossfeed function. Pull the lever up activates the longitudinal function.
14. **Half Nut Engage Lever (Thread Cutting) – (C, Fig. 12)** – located on front of the apron. Move the lever down to engage. Move the lever up to disengage.
15. **Cross Traverse Handwheel (D, Fig. 12)** – located above the apron assembly. Clockwise rotation moves the cross slide toward the rear of the machine.
16. **Compound Rest Traverse Handwheel (E, Fig. 12)** – located on the end of the compound slide. Rotate clockwise or counter – clockwise to move or position.
17. **Tool Post Clamping Lever (F, Fig. 12)** – located on top of the tool post. Rotate counter – clockwise to loosen and clockwise to tighten.
18. **Tailstock Quill Clamping Lever (A, Fig. 13)** – located on the tailstock. Lift up to lock the spindle. Push down to unlock.
19. **Tailstock Clamping Lever (B, Fig. 13)** – located on the tailstock. Lift up lever to lock. Push down lever to unlock.
20. **Tailstock Quill Traverse Handwheel (C, Fig. 13)** – located on the tailstock. Rotate clockwise to advance the quill. Rotate counter – clockwise to retract the quill.

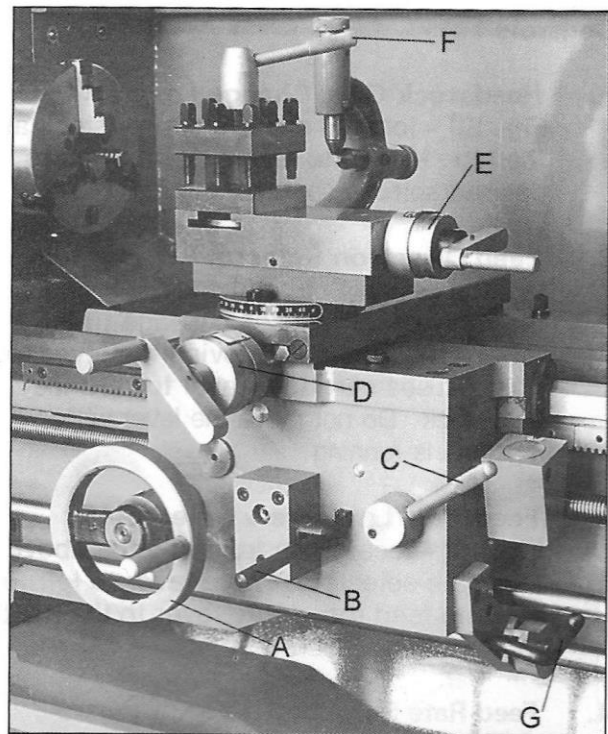


Fig. 12

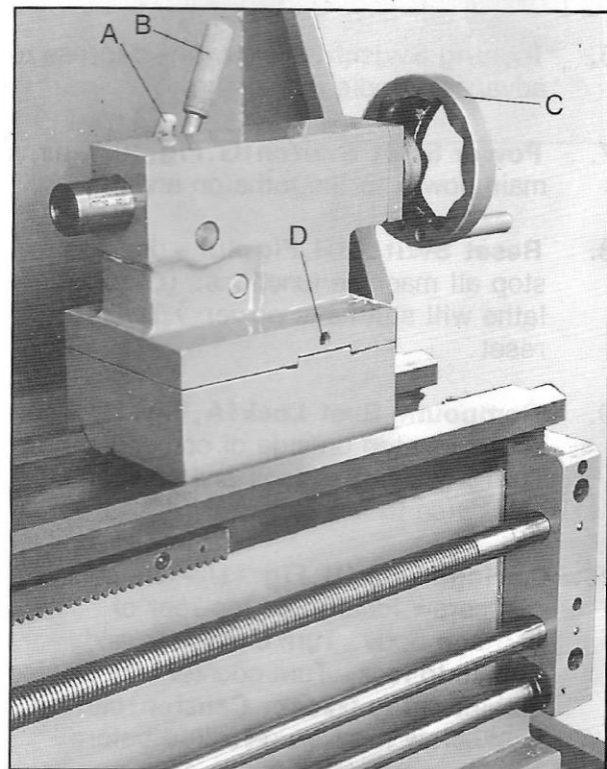


Fig. 13

21. **Tailstock Off – Set Adjustment (D, Fig. 13)** – two set screws located on either side of the tailstock base are used to off – set the tailstock for cutting tapers. Adjust side screws until amount of offset is indicated on scale.
22. **Forward/Reverse Lever (G, Fig. 12)** – located on the right side bottom of the apron. Push the lever down for counter – clockwise spindle rotation (forward). Pull the lever up for clockwise spindle rotation (reverse). Neutral position, the spindle remains idle.

Break – In Procedure

During manufacture and testing, this lathe has been operated in the low **R.P.M.** range for three hours.

To allow time for the gears and bearings to break – in and run smoothly, do not run the lathe above 580 R.P.M. for the first six hours of operation and use.

Operation

Feed and Thread Selection

1. Reference the feed and thread tables (A, Fig. 14) found on the front of Change Gear Cover.
2. Move levers (B & C, Fig. 14) to the appropriate detent position.

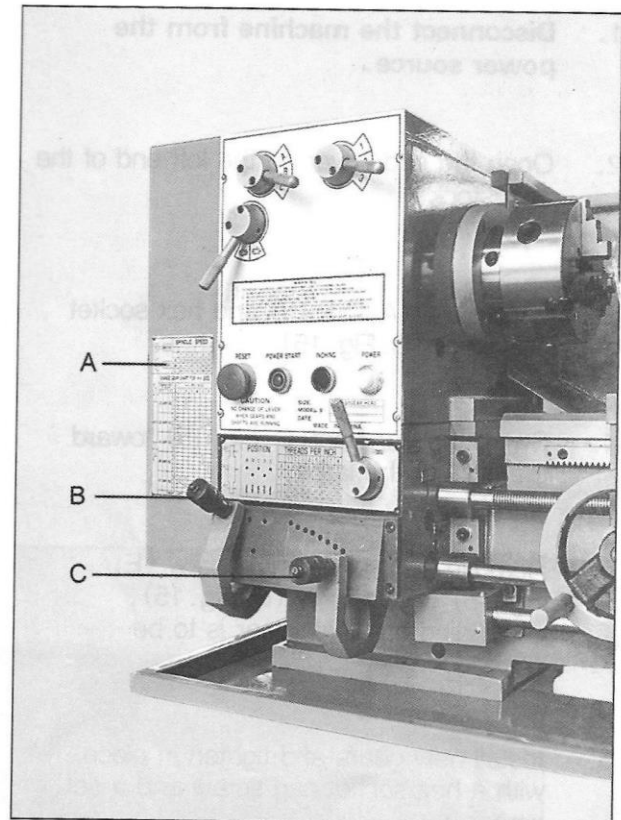


Fig. 14

Change Gear Replacement

Note: the 40T $\times$ 80T $\times$ 40T gears are installed in the end gear compartment when delivered from the factory. This combination will cover all inch feeds and threads under normal circumstances. The 25, 26, 43, 46, 47, 60 tooth gears found in the toolbox are used for some metric threads and feeds.

1. **Disconnect the machine from the power source.**
2. Open the end cover on the left end of the headstock.
3. Loosen nut(A, Fig. 15) and hex socket cap screw(B, Fig. 15).
4. Swing the quadrant(C, Fig. 15) toward the front of the lathe.
5. Remove hex socket cap screw (E, Fig. 15) or set screw(D, Fig. 15), depending on which gear is to be changed.
6. Install new gears and tighten in place with a hex socket cap screw and a set screw.
7. Loosen nut(A, Fig. 15) Move the quadrant back so teeth mesh on gears, and tighten nut(A, Fig. 15) and the hex socket cap screw(B, Fig. 15) to hold the quadrant in place. **Make sure there is a backlash of .002 – .003 between gears. Setting the gears too tight will cause excessive noise and wear.**
8. Close the cover and connect the machine to the power source.

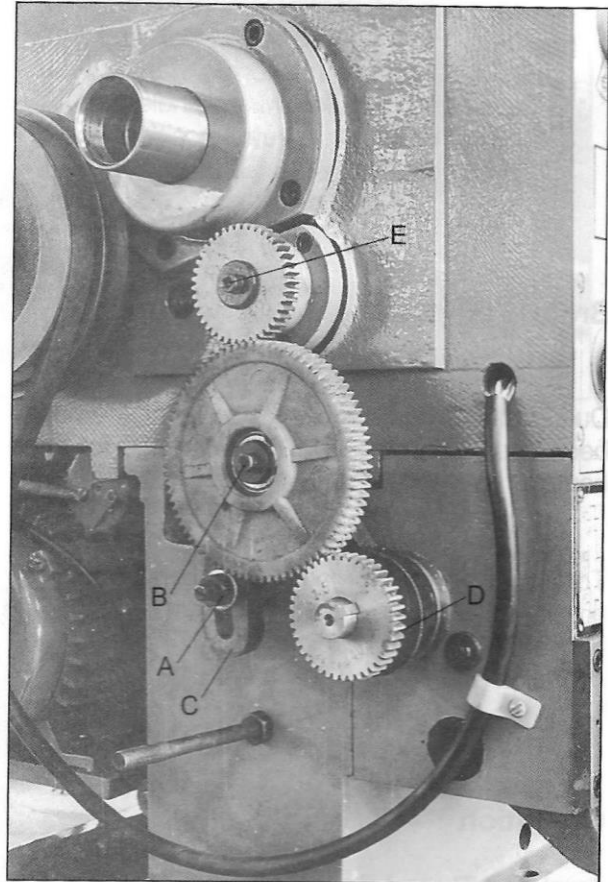


Fig. 15

Automatic Feed Operation and Feed Changes

1. Move the forward/reverse selector (A, Fig. 16) up or down depending on desired direction.
2. Set the carriage feed/thread selector (B, Fig. 16) to the left position to start the feed rod rotating.

Powered Carriage Travel

1. Push lever (C, Fig. 16) down to engage crossfeed. Pull lever up to engage longitudinal feed.

Thread Cutting

1. Set feed rate selectors (D, Fig. 16) in proper position for the correct feed rate of the thread pitch to be cut.
2. Move carriage feed/thread selector (B, Fig. 16) lever to the right (lead screw will start to rotate).
3. Engage the half nut lever (E, Fig. 16).

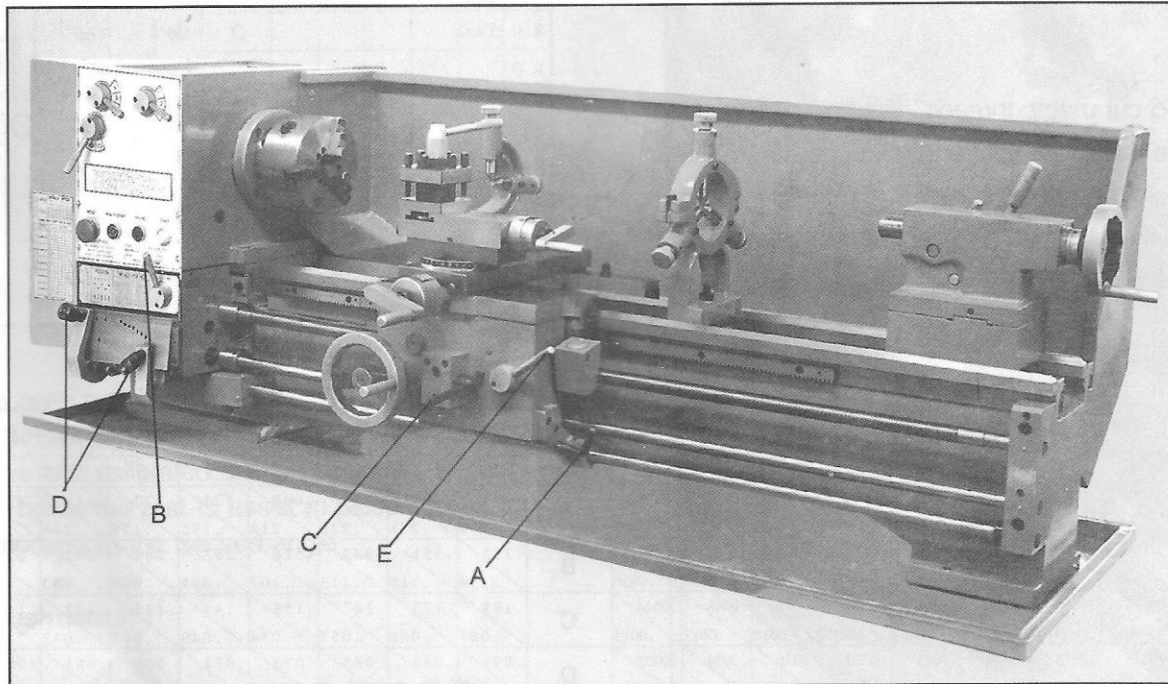


Fig. 16

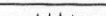
Inch Thread Pitch List

The diagram shows a vertical lathe tool with three distinct sections. The top section is labeled '40T', the middle section is labeled '80T', and the bottom section is labeled '40T'. The tool is positioned to cut a thread on a workpiece, with the thread profile visible on the right side of the tool.

POSITION				
A	B	C	D	E

4. To cut inch threads, refer to the chart above. The half nut lever and the threading dial are used to thread in the conventional manner. The thread dial chart specifies at which point a thread can be entered using the threading dial.
5. To cut metric threads, the half nuts must be left continually engaged once the start point has been selected and the half nut is initially engaged (thread dial cannot be used).

Feed Rate List

40T × 80T × 40T  in./rev. /  in./rev. 8T.P.I									40T × 80T × 40T  mm/rev. /  mm/rev. 8T.P.I								
Lever	1	2	3	4	5	6	7	8	Lever	1	2	3	4	5	6	7	8
A	.0311 .0105	.0277 .0094	.0262 .0089	.0249 .0084	.0226 .0077	.0207 .0070	.0191 .0065	.0178 .0061	A	.791 .268	.703 .238	.666 .226	.632 .214	.575 .196	.527 .178	.486 .166	.452 .154
B	.0156 .0053	.0138 .0047	.0131 .0044	.0124 .0042	.0113 .0039	.0104 .0035	.0096 .0032	.0089 .0030	B	.395 .134	.351 .119	.333 .113	.316 .107	.287 .098	.264 .089	.243 .083	.226 .077
C	.0078 .0026	.0069 .0024	.0066 .0022	.0062 .0021	.0057 .0019	.0052 .0018	.0048 .0017	.0044 .0015	C	.198 .067	.175 .060	.167 .057	.158 .054	.144 .049	.132 .045	.122 .042	.113 .038
D	.0039 .0013	.0035 .0012	.0033 .0011	.0031 .0011	.0028 .0010	.0026 .0009	.0024 .0008	.0022 .0007	D	.099 .033	.088 .030	.085 .028	.079 .027	.072 .025	.066 .022	.061 .021	.057 .019
E	.0020 .0007	.0017 .0006	.0017 .0006	.0016 .0016	.0014 .0005	.0013 .0004	.0012 .0004	.0011 .0004	E	.050 .017	.044 .015	.042 .014	.040 .014	.036 .012	.033 .011	.031 .011	.028 .010

Metric Thread Pitch List

CHANGE GEAR CHART FOR mmSIZE											
F	COMBINATION			LEVER	PITCH(mm)						
	GEARS										
	F		G		1	2	3	4	5	6	
	25		60	A							
				B		1.2					
				C		0.6					
				D		0.3					
				E							
	26		60	A					2.0		
				B					1.0	0.9	
				C	0.7				0.5	0.45	
				D	0.35				0.25		
				E							
	43		60	A	4.5	4				3.0	
				B	2.25					1.5	
				C	1.125					0.75	
				D							
				E							
	46		60	A					3.5		
				B					1.75		
				C					0.875	0.8	
				D						0.4	
				E						0.2	
	47		60	A							
				B	2.5	2.2					
				C	1.25	1.1					
				D		0.55					
				E							

The compound rest (A, Fig. 17) is located on top of the carriage and can be rotated 360 degrees. There is a calibrated dial (in degrees, B, Fig. 17) below the rest to assist in placement of the compound to the desired angle.

Adjustments

After a period of time, wear in some of the moving components may need to be adjusted.

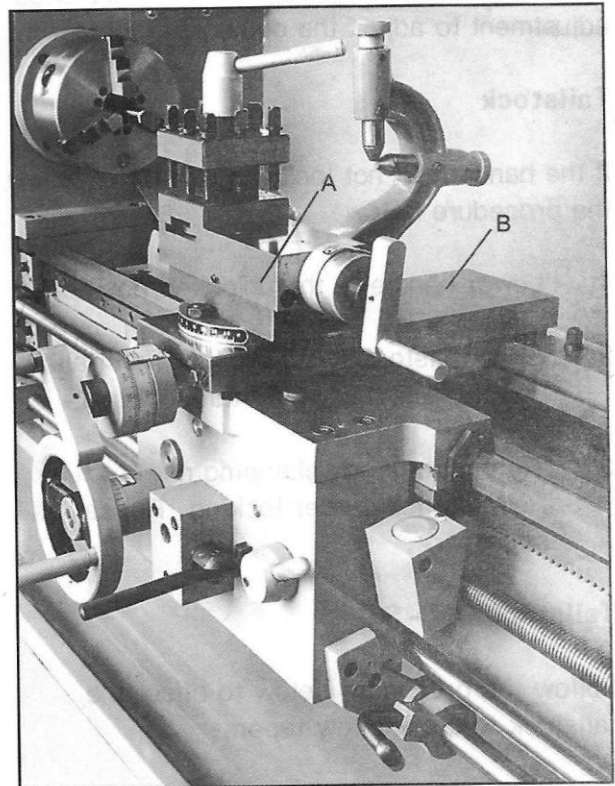


Fig. 17

Cross Slide

If the cross slide is too loose, follow procedure below to tighten:

1. Loosen the rear gib screw (A, Fig. 18) approximately one turn.
2. Tighten the front gib screw a quarter turn. Turn the cross slide handwheel to see if the cross slide is still loose. If it is still loose, tighten the front screw a bit more and try again.
3. When the cross slide is properly adjusted, tighten the rear gib screw. Do not over tighten. This will cause premature wear on the gib and mating parts.

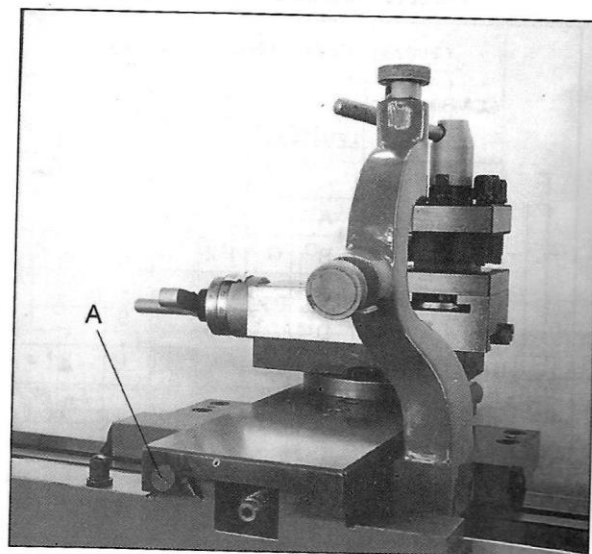


Fig. 18

Compound Rest

Follow the same procedure as the cross slide adjustment to adjust the compound rest.

Tailstock

If the handle will not lock the tailstock, follow the procedure below:

1. Lower handle to the unlocked position.
2. Slide tailstock to an area that will allow you to reach under the tailstock.
3. Tighten tailstock clamping nut $1/4$ turn. Re-test for proper locking. Repeat as necessary.

Tailstock Off - Set

Follow the procedure below to offset the tailstock to cut shallow tapers:

1. Lock tailstock in position by raising clamping lever (A, Fig. 19).

2. Alternately loosen and tighten front and rear setscrews(B, Fig. 19) until desired offset is indicated on scale.
3. Tighten both set screws(B, Fig. 19).

Headstock Alignment

The headstock has been aligned at the factory and should not require adjustment. However, if adjustment is deemed necessary, follow the procedure below to align the headstock:

1. Using an engineer's precision level on the bedways, make sure the lathe is level side to side and front to back. If the lathe is not level, correct to a level condition before proceeding. Re-test alignment if any leveling adjustments were made.
2. From steel bar stock of approximately two inches in diameter, cut a piece approximately eight inches long.
3. Place two inches of bar stock into chuck and tighten chuck. Do not use the tailstock or center to support the other end.
4. Set up and cut along five inches of the bar stock.
5. Using a micrometer, measure the bar stock next to the chuck and at the end. The measurement should be the same.
6. If the measurements are not the same and adjustment is required, loosen the bolts that hold the headstock to the bed. Do not loosen completely; some drag should remain.

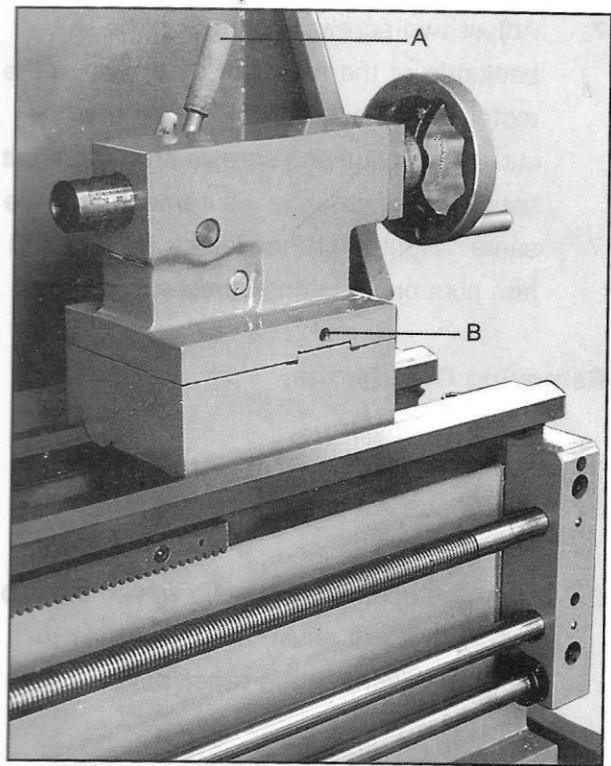


Fig. 19

- Adjust two screws located on the backside of the headstock just above the motor mount bracket and make another cut. Keep adjusting screws after each cut until the bar stock measurements are the same. Tighten all headstock screws and jam nuts on adjusting screws.

Removing Gap Section

- Locate two nuts (A, Fig. 20) in the center of the gap section.
- Using an open end wrench, tighten the two nuts. This will cause the taper pins to release. Remove the taper pins.
- Remove the four hex socket cap screws (B, Fig. 20) with a hex key wrench.
- Gap section can now be removed.

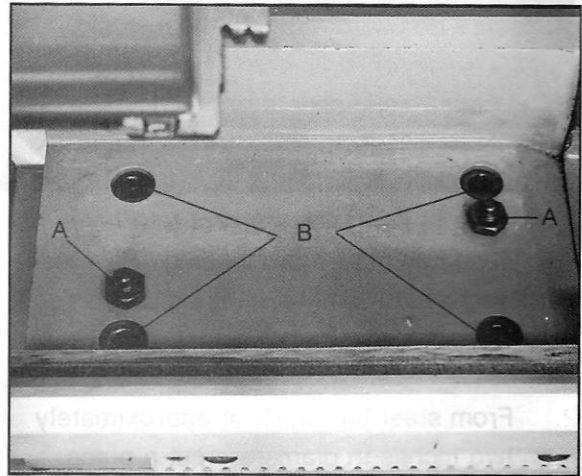


Fig.20

Installing Removable Gap Section

- Clean the bottom and the ends of the gap section thoroughly.
- Set gap section in place and align.
- Remove nuts from the taper pins.
- Slide taper pins in their respective holes and seat using a mallet. Install nuts on the taper pins finger tight.
- Install four socket head cap screws and tighten securely.
- Tighten the set screw.